

REMARKS

Applicants have carefully considered the Office Action dated April 8, 2003 regarding the above-identified application, and the amendments above together with the remarks that follow are presented in a bona fide effort to respond thereto and address all issues raised in that Action.

Claims 5-10, 13-18, 20-22, 26 and 28-32 are active in this case, although of those claims, claims 13-18, 21-23 and 28 stand withdrawn from consideration as directed to non-elected species subject matter. Claims 5-10, 20 and 26 are amended above, and Applicants are presenting new claims 29-32. Claims 1, 3, 4, 19, 23, 25 and 27 are newly cancelled by the amendments above, whereas claims 2, 11, 12 and 24 were cancelled previously.

Applicants note the Examiner's acknowledgement of consideration of the documents listed in the search report from the PCT priority application. To insure citation of those documents and for the Examiner's convenience, a PTO-1449 form listing those documents is submitted herewith. It is requested that the Examiner initial the form to memorialize consideration of the documents and provide an initialed copy for Applicants, with the next correspondence regarding this case. Since the documents have been submitted and considered, neither a formal disclosure statement nor a fee should be necessary.

Claims 13-18, 21, 22 and 28 remain in this case but stand withdrawn from consideration. It is submitted that certain claims that have been considered (e.g. 5, 6 and 9), which should be allowable as will be discussed below, are generic with respect to the subject matter of various ones of the withdrawn claims. For example, claims 13 and 14 depend from remaining examined claim 5. Applicants request that the withdrawn claims be rejoined upon allowance of appropriate generic claims and passed to issue therewith.

Applicants note with appreciation the indication that claims 7-10, 20 and 26 would be allowable if certain objection were overcome. These claims have been amended to correct noted

informalities, e.g. to delete references to “etc.” that the Examiner found objectionable. Also, claim 8 has been recast in independent form, as the Examiner suggested. Hence, claims 7-10, 20 and 26 should be in condition for immediate allowance.

The Examiner objected to certain terms in claims 3, 4, 6-10, 19, 20, 25, 26 and 27. A number of these claims are cancelled above, rendering the objections thereto moot. Among the ones of these claims that remain active, Applicants have corrected the objectionable terms, by amendments above. For example, various occurrences of “etc.” have been deleted. Applicants have also revised the grammar of various remaining claims. It is submitted for the record that the amendments herein to the pending claims do not narrow any amended claim.

Claims 4, 6 and 25 were rejected under 35 U.S.C. § 103 as unpatentable over U.S. Patent No. 6,253,554 to Kobayashi et al. (hereinafter Kobayashi) in combination with either JP 60-171935 or U.S. Patent No. 5,185,997 to Nishijima. Claims 1, 5 and 23 were rejected under 35 U.S.C. § 103 as unpatentable over the same Kobayashi et al. patent in combination with U.S. Patent No. 2,786,341 to Green. Claims 3, 19 and 27 were rejected under 35 U.S.C. § 103 as unpatentable over Kobayashi et al. and Green further in view of either one of the above-cited Japanese and Nishijima documents. Of these rejected claims, only claims 5 and 6 remain active, and issues with regard to other rejected claims should be moot in view of the cancellation of the particular claims. The rejections of claims 5 and 6 are traversed, for reasons explained in detail below.

Patentability of Claim 5

Claim 5 states that the turbine cooling system includes a heat exchanger, a liquid-separating means, and a second compressor. As claimed, the liquid-separating means separates the liquid **from the gas cooled by the said heat exchanger**, which means that the liquid-separating means is downstream from the heat exchanger. The claim also states that the second compressor raises the

pressure of the gas having passed through the said liquid-separating means, which means that the second compressor is downstream of the liquid-separating means. As such, the liquid-separating means precedes the second compressor in the flow of gas through the turbine cooling system and serves to protect the second compressor from erosion or the like that might otherwise be caused by liquid entrained in the gas. The applied documents taken together do not fairly suggest the use of a mist removal device or other type of liquids-separating means, between a heat exchanger and a second compressor, of a turbine cooling system.

Kobayashi discloses a turbine with a cooling system. The Examiner takes the position that the Kobayashi cooling system includes a first compressor, a heat exchanger and a second compressor but not a liquid-separating means. Green is cited for a liquid separator. Green, however, does not relate to cooling a turbine. Green discloses a system for processing air associated with a jet engine in order to cool the air and supply cool air to a space, such as the cabin of an aircraft (see e.g. column 1, lines 15-24; and column 2, lines 15-19). Although Green discloses a water separator 28, such a disclosure for a cabin cooling system would not lead one skilled in the turbine cooling art to use such a separator in a turbine cooling system, let alone to place the separator between the heat exchanger and second compressor of the turbine cooling system, as in claim 5.

Hence, the combination of documents applied to reject claim 5 would not have been obvious and would not have fairly suggested all of the subject matter specifically recited in that claim. The claim therefore patentably distinguishes over the applied documents, and the rejection of claim 5 should be withdrawn.

Patentability of Claim 6

Claim 6 states that the turbine cooling system includes a heat exchanger, a dust-collecting means for separating out dust, and a second compressor. In this claim, the dust-collecting means separates the dust out of the gas cooled by the said heat exchanger, which requires that the dust-collecting means is downstream from the heat exchanger. Claim 6 also indicates that the second compressor raises the pressure of the gas having passed through the said dust-collecting means, which requires that the second compressor is downstream from the dust-collecting means. As such, the dust-collecting means precedes the second compressor in the flow of gas through the turbine cooling system and serves to protect the second compressor from particles of dust that might be entrained in the gas. The applied documents taken together do not fairly suggest the use of a filter or other type of dust-collecting means, between a heat exchanger and a second compressor, of a turbine cooling system.

Kobayashi discloses a turbine with a cooling system. The Examiner takes the position that the Kobayashi cooling system includes a first compressor, a heat exchanger and a second compressor but not a dust collecting element, such as a dust filter. Although the other applied documents suggest filters, the teachings of those secondary documents do not fairly suggest placement of a filter between the heat exchanger and a second compressor as claimed.

Nishijima, for example, discloses a turbine cooling system 20 with a filter 5 downstream of an intercooler 4. However, the cooling system 20 does not include a second compressor. As such, Nishijima does not teach placement of the filter between a heat exchanger and a second compressor and thus fails to teach using the filter to protect a second compressor. Absent some teaching to use the filter to protect a second compressor, Nishijima would not lead one of skill in the art to place a filter in the Kobaybashi system between the heat exchanger and the second compressor, so as to protect the second compressor. One of skill in the art would instead have been lead to place the

filter just upstream of the turbine to protect the turbine, as is actually taught by Nishijima, and such a combination would not satisfy the actual limitations of claim 6. Hence, the proposed combination of Kobayashi and Nishijima does not make the subject matter of claim 6 obvious or unpatentable.

It is believed that the teachings of laid open Japanese application JP 60-171935 are similarly deficient. The Examiner notes only the general disclosure of filters in a cooling system, as used to protect the turbine. It is submitted that this would not lead one to use a filter or any other dust separating means to protect a second compressor; and the addition of filters to the system of Kobayashi to protect the turbine, would not satisfy the claim requirement for the dust separating means between the heat exchanger and the second compressor.

Hence, the combinations of documents applied to reject claim 6 would not fairly suggest the subject matter specifically recited in that claim. The claim therefore patentably distinguishes over the applied documents, and the rejection of claim 6 should be withdrawn.

Patentability of new claims

Each of new claims 29 and 30 specifies a liquid-separating means for separating liquid from the gas cooled by the heat exchanger, and a second compressor to raise the pressure of the gas having passed through the liquid-separating means to a desired level. Claim 29 adds a further requirement that the liquid-separator means is disposed below the heat exchanger and above the second compressor. Instead of a similar limitation, the last paragraph of claim 30 states that the heat exchanger, the liquid-separating means and the second compressor are arranged from upstream to downstream in the turbine-cooling system. The documents applied against claims in the Action do not suggest placement of a liquid-separating means in a turbine-cooling system, let alone placement thereof in the location(s) as recited in these new claims.

The Kobayashi patent does not disclose a liquid-separating means, and the Green patent that the rejection relies on for the separator does not make up for the deficiency of Kobayashi. First, Green is not analogous art, as Green relates to cooling air from a jet engine inlet to supply cool air to a cabin, which is not relevant to cooling of a turbine. Further, Green does not teach placement of the water separator upstream of a second compressor. Hence, even if combined, the combination of Green with Kobayashi would not satisfy the location requirement of either claim 29 or that of claim 30.

Hence, new claims 29 and 30 should be patentable over Kobayashi and Green. It is believed that the Nishijima and Japanese JP 60-171935 documents fail to suggest the liquid-separating means or the placement thereof in the turbine cooling system in the manner claimed. Hence, claims 29 and 30 should be patentable over all of the art applied in the Office Action.

Claims 31 and 32 both recite a dust-collecting means for separating dust from the gas cooled by the heat exchanger, and a second compressor to raise the pressure of the gas having passed through the dust-collecting means to a desired level. In claim 31, the dust-collecting means is disposed below the heat exchanger and above the second compressor in the turbine-cooling system. By contrast, claim 32 recites that the heat exchanger, the dust-collecting means and the second compressor are arranged from upstream to downstream in the turbine-cooling system. The documents applied against claims in the Action do not suggest placement of a dust-collecting means in the location(s) as recited in these new claims.

Kobayashi does not provide a dust-collecting means. The secondary Nishijima and JP 60-171935 documents disclose dust-collecting means, but not in the specified location(s) in relation to the second compressor. Green was cited for a liquid-separating means, not for a dust-collecting means. Applicants therefore submit that any combination of Kobayashi with one or more of the other applied documents would still not result in a turbine cooling system with a dust-collecting

means in the location as recited in new claim 31 or in the location recited in new claim 32. Hence, claims 31 and 32 should be patentable over all of the art applied in the Office Action.

Conclusions

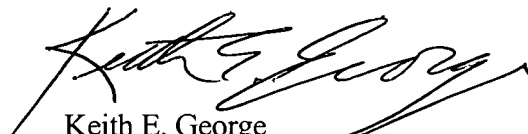
For reasons explained above, pending claims 5-10, 20, 26 and 29-32 should all be patentable over the art. It is submitted that a number of allowable claims are sufficiently generic that individual ones of withdrawn claims 13-18, 21, 22 and 28 should be rejoined and allowed to issue in this case. Prompt favorable reconsideration and issuance of a notice of allowability of all of the pending claims are earnestly solicited.

It is believed that this response addresses all issues raised in the April 8, 2003 Office Action. However, if any further issue should arise that may be addressed in an interview or obviated by an Examiner's amendment, it is requested that the Examiner telephone Applicants' representative at the number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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